National Bureau of Standards
JUL 3 1946

U. S. DEPARTMENT OF COMMERCE
HENRY A, WALLACE, Secretary
NATIONAL BUREAU OF STANDARDS
E. U. CONDON, Director

MATERIALS FOR SAFETY WEARING APPAREL

COMMERCIAL STANDARD CS129-46

Effective date for New Production From May 6, 1946

A RECORDED VOLUNTARY STANDARD OF THE TRADE

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1946

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 5 cents

PROMULGATION

of

COMMERCIAL STANDARD CS129-46

MATERIALS FOR SAFETY WEARING APPAREL

On October 8, 1941, at the instance of the Industrial Safety Equipment Association, the manufacturers of safety wearing apparel adopted a proposed commercial standard for materials used in the manufacture of safety wearing apparel. Copies of the draft were submitted to interested producers, distributors, and user organizations for comment and later adjusted to meet the composite recommendations of those concerned.

As a general conference was deemed unnecessary, the recommended commercial standard was circulated to manufacturers, distributors, and users for written acceptance. Those concerned have since accepted and approved the standard as shown herein, for promulgation by the U. S. Department of Commerce, through the National Bureau of Standards.

The standard is effective for new production from May 6, 1946.

Promulgation recommended.

. F. W. Reynolds,
Acting Chief, Division of Trade Standards.

Promulgated.

E. U. Condon,
Director, National Bureau of Standards.

Promulgation approved.

Henry A. Wallace,
Secretary of Commerce.

MATERIALS FOR SAFETY WEARING APPAREL

COMMERCIAL STANDARD CS129–46

PURPOSE

1. The purpose of this commercial standard is to (*a*) provide protection to the wearer of safety wearing apparel through the establishment of standard minimum quality requirements and methods of test for the material used in the manufacture of such apparel; (*b*) serve as a basis for fair competition between manufacturers; and (*c*) provide a foundation for guaranteeing the quality of the materials used in the manufacture of this product.

SCOPE

2. This commercial standard covers minimum quality requirements for the material used in the manufacture of safety wearing apparel, including:

(*a*) Asbestos fabrics.
(*b*) Cotton fabrics, flame-resistant.
(*c*) Leather.
(*d*) Woolen fabrics.
(*e*) Accessory materials.

3. This standard also covers methods of test and methods of labeling to certify or guarantee quality.

MATERIAL SPECIFICATIONS

ASBESTOS FABRICS

4. *Heavy duty.*—Asbestos cloth used in the general line of safety wearing apparel, including gloves, mittens, lined or unlined, plain or reinforced, and all kinds of hand or arm protectors, shall meet the following minimum requirements:

(*a*) *Yarns.*—Plain asbestos, 2 ply 14 cut, commercial grade, asbestos content 75 to 80 percent exclusive, when tested according to methods of test approved by the National Bureau of Standards. (ASTM Designation D299–42).

(*b*) *Weave.*—Herringbone.

(*c*) *Weight.*—2¼ pounds per square yard.

(*d*) *Breaking strength.*—This fabric shall have a minimum breaking strength of 150 pounds for warp and 64 pounds for filling when tested by the grab method in accordance with procedure approved by the National Bureau of Standards. (Commercial Standard CS59–44).

5. *Light duty.*—Safety wearing apparel made from asbestos fabrics meeting the following minimum requirements, may be guaranteed or labeled to conform to the commercial standard provided the guarantee or label also indicates light duty. The industry, however, does not

recommend this fabric for gloves or mittens, and its use for that purpose is not in conformity with this standard. The minimum requirements for light duty asbestos fabrics are:

(*a*) *Yarns.*—Plain asbestos, 2 ply 10 cut, commercial grade, asbestos content 75 to 80 percent exclusive, when tested according to methods of test approved by the National Bureau of Standards. (ASTM Designation D299–42).

(*b*) *Weave.*—Basket.

(*c*) *Weight.*—2¼ pounds per square yard.

(*d*) *Breaking strength.*—This fabric shall have a minimum breaking strength of 135 pounds for warp and 55 pounds for filling when tested by the grab method in accordance with procedure approved by the National Bureau of Standards. (Commercial Standard CS59–44).

COTTON FABRICS, FLAME-RESISTANT

6. *Heavy duty.*—Flame-resistant cotton fabrics used in those items of safety clothing, including aprons, leggings, and heavy duty sleeves, which are called upon to perform heavy duty service, shall have minimum quality base cloth as follows:

(*a*) *Fabric.*—Gray cotton duck, 12 ounces per linear yard in 29-inch widths (14.90 ounces per square yard).

(*b*) *Weave.*—Plain, two warp threads woven as one with single filling.

7. *Light duty.*—For those items of safety clothing such as coats, pants, sleeves, jumper suits and linings, which perform lighter hazards service, the minimum quality base cloth shall be:

(*a*) *Fabric.*—Gray cotton duck or suiting 8 ounces to 10 ounces per linear yard in 29-inch widths (9.93 ounces to 12.41 ounces per square yard).

(*b*) *Weave.*—Plain, with two warp threads woven as one, with single filling.

8. *Construction.*—The construction and strength requirements for the fabrics used in both the heavy duty and lighter duty garments shall be in accordance with table 1 when tested as indicated in Federal Specification CCC–T–191a. The breaking strength of the treated fabrics when tested by the grab method shall be not less than that required for the untreated cloth.

TABLE 1.—*Construction and requirements of cotton fabrics*

Type of fabric	Untreated (gray)							Treated	
	Ounces per linear yard, 29 inches wide	Ounces per square yard	Minimum acceptable ounces per square yard	Minimum thread count		Minimum breaking strength, 1 by 1 by 3 grab		Minimum breaking strength, 1 by 1 by 3 grab	
				W [1]	F	W	F	W	F
Duck or suiting	8	9.93	9.68	74	27	130	85	130	85
Duck or suiting	10	12.41	12.10	72	26	160	105	160	105
Duck	12	14.90	14.53	72	25	170	120	170	120

[1] Two threads woven as one.

9. *Treatment.*—The cotton fabrics indicated in table 1 shall be uniformly treated with a suitable nonpoisonous compound to produce a flame-resistant, nonirritating cloth, no specimen of which when tested by the methods of test indicated in paragraph 17 shall continue flaming for more than 2 seconds after the burner flame is withdrawn. The average length of char of the specimens shall not be more than 3½ inches, and the maximum length of char for any one of the specimens shall not be more than 4½ inches.

LEATHER

10. *Tannage.*—All leather used in the manufacture of safety wearing apparel shall be thoroughly chrome tanned, and shall contain not less than 5 percent nor more than 13 percent of grease; and not less than 3 percent nor more than 5 percent of chromic oxide when tested as indicated in paragraph 18.

11. *Grading tolerance.*—The leather shall be soft and pliable. It shall be free from skive cuts, and open grub holes, although well-healed grub scars or brand marks are permitted. The use of shelly or middle splits is permitted only in the manufacture of gauntlets or cuffs.

WOOLEN FABRICS

12. *Weight.*—Woolen fabrics used in the manufacture of safety wearing apparel shall have a minimum weight of 20 ounces per linear yard in 54-inch widths (13.33 ounces per square yard).

13. *Fiber content.*—Woolen fabrics used in the manufacture of safety wearing apparel shall contain no fiber other than wool, reprocessed wool, reused wool, or a combination thereof, as described in the "Wool Products Labeling Act of 1939" (Public No. 850—76th Congress).

ACCESSORY MATERIALS

14. *Metal fasteners.*—The metal fasteners used in the manufacture of safety wearing apparel shall be of such design as to permit ease of adjustment and removal of clothing, and shall be fully protected from corrosion by a tinning, japanning, or plating process when tested according to the method indicated in paragraph 19a.

14a. *Buckles.*—It is recommended that buckles, slides, loops, fasteners, hooks, and eyes, eyelets, and grommets shall be of sufficiently strong construction to meet maximum safety requirements.

14b. *Buttons, snap.*—Brass spring type snap buttons with wide flanged studs of large size are recommended as the minimum standard for heavy-duty safety wearing apparel. Ball-and-socket types of snap buttons are acceptable and recommended for service where the sturdier grip of the spring type is unnecessary.

14c. *Rivets.*—Tubular type rivets of a grade that will make a smooth clinch or a capped split type rivet are recommended as the minimum standard for safety wearing apparel.

15. *Thread.*—In the sewing necessary to the manufacture of safety wearing apparel, the lockstitch shall be used with at least four-cord unbleached-cotton thread (table 1, ticket No. 16, Federal Specifica- for THREAD: COTTON V–T–276b), except that asbestos thread of suitable strength may be used for sewing asbestos cloth.

15a. Chain stitching and a lighter-weight thread than that indicated in paragraph 15 may be used for linings.

METHODS OF TEST

COTTON FABRICS, FLAME-RESISTANT

16. *Specimens.*—For the tests on flame-resistant cotton fabrics, 10 specimens 2 by 12½ inches shall be cut with their long dimensions in the direction of the warp and 10 in the direction of the filling. Each lot of 10 shall be cut from at least 4 places in the sample.

17. *Procedure.*

17a. The specimens shall be suspended vertically from a clamp covering the upper ½ inch of the length. To protect the specimen from drafts, the apparatus shall be enclosed in a sheet-metal shield 12 inches wide, 12 inches deep, and 30 inches high, open at the top, and be provided with a vertical sliding glass front. Sufficient room shall be left at the bottom of the front to allow manipulation of the gas burner used in igniting the specimen.

17b. The specimen shall be suspended with its lower end ¾-inch above the top of a Bunsen or Tirrill gas burner, having a tube of ⅜-inch inside diameter, and with the air supply completely shut off, adjusted to give a luminous flame 1½ inches long. The flame is applied vertically near the middle of the width of the lower end of the specimen for 12 seconds, then withdrawn, and the duration of flaming in the specimen noted.

17c. The length of char shall then be determined. It is the distance from the end of the specimen that was exposed to the fire, to the end of the tear made lengthwise of the specimen through the center of the charred area in the following way. Hooks are inserted in the specimen, one on each side of the charred area ¼ inch in from the adjacent outside edge. The weight specified in table 2 is attached to one hook and applied to the specimen gently, without impact, by raising the other hook. The specimen will tear through the charred area until fabric strong enough to carry the load is reached.

TABLE 2.—*Tearing weight of charred duck*

Weight per square yard of duck before treating	Tearing weight for determining charred length
Up to 15 ounces	0.5 pound.
Up to 23 ounces	0.75 pound.

LEATHER

18. *Grease and chromic oxide.*—In the event of disagreement between buyer and seller as to the methods of test to determine the amount of grease and chromic oxide in leather used in the manufacture of safety wearing apparel, the test methods approved by the National Bureau of Standards shall be used. (Federal Specification KK–A–606.)

ACCESSORY MATERIALS

19. *Metal fasteners.*

19a. *Corrosion test.*—In the event of disagreement as to the method of test to determine the degree to which metal fasteners used in the manufacture of safety wearing apparel will withstand corrosion, the test methods approved by the National Bureau of Standards shall be used. (Commercial Standard CS85–41.)

LABELING

20. When safety wearing apparel is guaranteed to comply with the commercial standard, it is recommended that the following form be used for guarantees on invoices and sales contracts:

> The ---------- Company guarantees that the materials in the wearing apparel covered by this invoice (or contract) comply with all the requirements of Commercial Standard CS129–46, for Materials for Safety Wearing Apparel, as issued by the National Bureau of Standards, U. S. Department of Commerce, and that the fabric is {heavy / light} duty.

EFFECTIVE DATE

21. The standard is effective for new production from May 6, 1946.

STANDING COMMITTEE

22. The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision, may be addressed to any member of the committee or to the Division of Trade Standards, which acts as secretary for the committee.

A. O. Boniface (chairman), Industrial Safety Equipment Association, 366 Madison Avenue, New York, N. Y.
G. H. Schauweker, American Optical Co., 1939 Thomas Street, South Bridge, Mass.
I. W. Millard, Industrial Gloves Co., 777 Garfield Boulevard, Danville, Ill
E. L. Wheeler, F. H. Wheeler Mfg. Co., 224 West Huron, Chicago, Ill.
J. T. Griffis, Southern Asbestos Co., Charlotte, N. C.
C. A. Townes, A. D. Juilliard and Co., Inc. (Aragon Mills Division), Aragon, Polk County, Ga.
Alexander Morrison, American Woolen Co., Inc., Administration Bldg., Shawsheen Village, Andover, Mass.
Kenneth E. Bell, A. C. Lawrence Leather Co., Peabody, Mass.
J. E. Culliney, Bethlehem Steel Co., Bethlehem, Pa.
C. L. Wagner, Carnegie Illinois Steel Corp., Duquesne, Pa.
H. S. Simpson, Caterpillar Tractor Co., Peoria, Ill.
Melbourne F. Sinnard, Safety Branch Office of Industrial Relations, Navy Dept., Washington 25, D. C.
Robert W. Webster, Alternate, Research & Standards Branch, Bureau of Ships, Navy Dept., Washington 25, D. C.

HISTORY OF PROJECT

23. On September 22, 1941, the Industrial Safety Equipment Association requested the Division of Trade Standards to call a manufacturers' conference to discuss a specification compiled by a Committee of Safety Wearing Apparel Manufacturers, looking to the establishment of a commercial standard for materials for safety wearing apparel. Accordingly, a proposed commercial standard covering the quality requirements submitted by this committee was discussed and approved with minor modifications by a preliminary conference of safety wearing-apparel manufacturers in Chicago on October 8, 1941. Copies of the proposed commercial standard were then submitted to interested producers, distributors, and user organizations for comment. Following suitable adjustment in the light of comment received, and unqualified endorsement by a number of interested organizations, no public hearing was believed necessary, and the recommended commercial standard for materials for safety wearing apparel was submitted to the entire trade for written acceptance on April 30, 1943. The Bureau having received acceptances estimated to represent a satisfactory majority of production, and in the absence of valid opposition, the establishment of the standard was announced on March 5, 1946.

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date _____

Division of Trade Standards,
National Bureau of Standards,
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard CS 129–46 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

Production [1] Distribution [1] Purchase [1] Testing [1]

of materials for safety wearing apparel.

We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer _____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed)

Street address _____

City, zone, and State _____

[1] Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer, and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold; first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

24. The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, testing or purchase of materials for safety wearing apparel. In accepting the standard they reserved the right to depart therefrom as they individually deem advisable. It is expected that articles which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

ASSOCIATIONS

(General Support)

Allied Building Metal Industries, New York, N. Y.
American Foundrymens Association, Chicago, Ill.
Consumers Cooperative Association, North Kansas City, Mo.
Industrial Safety Equipment Association, New York, N. Y.

FIRMS

Acme Safety Products Co., Akron, Ohio.
Ainsworth Manufacturing Corporation, Detroit, Mich.
Alabama By-Products Corporation, Birmingham, Ala.
Alabama Dry Dock & Shipbuilding Co., Mobile, Ala.
Allegheny Ludlum Steel Corporation, Brackenridge, Pa.
American Allsafe Co., Inc., Buffalo, N. Y.
American Copper & Brass Works, Inc., Cincinnati, Ohio.
American Electrical Heater Co., Detroit, Mich.
American Forging & Socket Co., Pontiac, Mich.
American LaFrance-Foamite Corporation, Elmira, N. Y.
American Locomotive Co., New York, N. Y.
American Optical Co., Southbridge, Mass.
American Rolling Mill Co., The, Middletown, Ohio.
American Steel & Wire Co., Cleveland, Ohio.
American Woolen Co., New York, N. Y.
Aragon Mills, Aragon, Ga.
Asbestos Textile Co., Inc., Chicago, Ill.
Atlanta Gas Light Co., Atlanta, Ga.
Bagley & Sewall Co., The, Watertown, N. Y.
Bakelite Corporation, Bound Brook, N. J.
Balmar Corporation, The, Baltimore, Md.
Bartlett & Snow Co., The C. O., Cleveland, Ohio.
Bausch & Lomb Optical Co., Rochester, N. Y.
Bell Co., M. A., St. Louis, Mo.
Bethlehem Steel Corporation Subsidiary Companies, Bethlehem, Pa.
Biggs Boiler Works Co., The, Akron, Ohio.
Boeing Airplane Co., Wichita Division, Wichita, Kans.
Boone County Coal Corporation, Monclo, W. Va.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Botwinik Bros., Inc., Hamden, New Haven, Conn.
Boyer-Campbell Co., The, Detroit, Mich.
Brewster Aeronautical Corporation, Long Island City, N. Y.
Broden Construction Co., The, Cleveland, Ohio.
Buffalo Foundry & Mach. Co., Buffalo, N. Y.
Bullard Co., Bridgeport, Conn.
Bullard Co., E. D., San Francisco, Calif.
Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg, Idaho.
C. F. & I. Corporation, Pueblo, Colo.
Callite Tungsten Corporation, Union City, N. J.
Cameron & Barkley Co., The, Charleston, S. C.
Canfield Oil Co., The, Cleveland, Ohio.
Carey Machinery & Supply Co., Baltimore, Md.
Carnegie-Illinois Steel Corporation, Pittsburgh, Pa.
Carolina Asbestos Co., Davidson, N. C.
Caterpillar Tractor Co., Peoria, Ill.
Central Iron & Steel Co., Harrisburg, Pa.
Chicago Brick Co., Chicago, Ill.
Chicago Hardware Foundry Co., The, North Chicago, Ill.
Colorado Fuel & Iron Corporation, Pueblo, Colo.
Combustion Engineering Co., Inc., Hedges-Walsh-Weidner Division, Chattanooga, Tenn.
Consolidated Machine Tool Corporation, Rochester, N. Y.
Consolidated Vultee Aircraft Corporation, Vultee Field, Calif.
Consolidation Coal Co., Fairmont, W. Va.
Continental Industrial Engineers, Inc., Chicago, Ill.
Continental Steel Corporation, Kokomo, Ind.
Cutter Wood & Sanderson Co., Cambridge, Mass.
Detroit Testing Laboratory, The, Detroit, Mich. (General support.)
Diamond Alkali Co., Painesville, Ohio.
Douglas Aircraft Co., Inc., Santa Monica, Calif.
Eagle-Ottawa Leather Co., Grand Haven, Mich.
Edge Moor Iron Works, Inc., Edge Moor, Del.
Electro Refractory & Alloys Corporation, Buffalo, N. Y.
Emsco Derrick & Equipment, Co. Los Angeles, Calif.
Enterprise Coal Co., Garrett, Pa.
Farnam & Co., F. D., Chicago, Ill.
Fenton Foundry Supply Co., The, Dayton, Ohio.
Fitzsimons Co., The, Youngstown, Ohio.
Follansbee Steel Corporation, Pittsburgh, Pa.
Foote Mineral Co., Philadelphia, Pa.
Fort Pitt Bridge Works, Canonsburg, Pa.
Foundry Service Co., Birmingham, Ala.
Franklinshire Worsted Mills, Philadelphia, Pa.
Fulton Iron Works Co., St. Louis, Mo.
Gates-Mills, Inc., Johnstown, N. Y.
Gatke Corporation, Chicago, Ill.
Gay Brothers Co., Cavendish, Vt.
Gebhardt Co., A. L., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
General Engineering & Dry Dock Co., Alameda, Calif.
General Iron Works Co., Denver, Colo.
Genter Co., C. D., Chattanooga, Tenn.
Geuder, Paeschke & Frey Co., Milwaukee, Wis.
Goehringer Foundry Supply Co., The, Cincinnati, Ohio.
Goodrich Co., The B. F., Akron, Ohio.
Great Lakes Steel Corporation, Ecorse, Mich.
Greene Rubber Co., The, Boston, Mass.
Haddock Mining Co., Wilkes Barre, Pa.
Hansell-Elcock Co., Chicago, Ill.
Hardinge Manufacturing Co., York, Pa.
Hatch Textile Research, New York, N. Y.
Heller Brothers Co., Newark, N. J.
Hetherington & Berner, Inc., Indianapolis, Ind.
Hettrick Manufacturing Co., The, Toledo, Ohio.
Hobart Brothers Co., The, Troy, Ohio.
House & Sons, Inc., Chas. W., Unionville, Conn.
Houze Convex Glass Co., L. J., Point Marion, Pa.
Hudson Valley Fuel Corporation, Troy, N. Y.

Industrial Gloves Co., Danville, Ill.
Industrial Products Co., Philadelphia, Pa.
Inland Steel Co., East Chicago, Ind.
International Nickel Co., Inc., The, Huntington, W. Va.
Irvington Smelting & Refining Works, Irvington N. J.
Jessop Steel Co., Washington, Pa.
Jewell Ridge Coal Corporation, Jewell Ridge, Tazewell County, Va.
Kastenhuber & Lehrfeld, New York, N. Y.
Kent Manufacturing Co., The, Clifton Heights, Pa.
Keystone Steel & Wire Co., Peoria, Ill.
Kimball Safety Products Co., The, Cleveland, Ohio.
Koppers Co., Bartlett Hayward Division, Baltimore, Md.
Laclede Gas Light Co., The, St. Louis, Mo.
Lake Erie Engineering Corporation, Buffalo, N. Y.
Lewyt Corporation, Brooklyn, N. Y.
Libbey-Owens-Ford Glass Co., Toledo, Ohio.
Lincoln Electric Co., The, Cleveland, Ohio.
Link-Belt Co., Chicago, Ill.
Los Angeles Shipbuilding & Drydock Corporation, San Pedro, Calif.
Lukens Steel Co., Coatesville, Pa.
Lukenweld, Inc., Coatesville, Pa.
Lummus Co., The, New York, N. Y.
MacAlpine Coal Co., Charleston, W. Va.
Mackintosh-Hemphill Co., Pittsburgh, Pa.
Malleable Iron Fittings Co., Branford, Conn.
Mallory & Co., Inc., P. R., Indianapolis, Ind.
Marion Machine, Foundry & Supply Co., Marion, Ind.
Martin Co., Glenn L., Middle River, Md.
Mepham Corporation, Geo. S., East St. Louis, Ill.
Milwaukee Gas Light Co., Milwaukee, Wis.
Mine Safety Appliances Co., Pittsburgh, Pa.
The Mine & Smelter Supply Co., Denver, Colo.
Minneapolis-Honeywell Regulator Co., Minneapolis, Minn.
Minneapolis Moline Power Implement Co., Minneapolis, Minn.
Minnesota Power & Light Co., Duluth, Minn.
Moore Dry Dock Co., Oakland, Calif.
Morrisdale Coal Mining Co., Morrisdale Pa.
National Refining Co., The, Cleveland, Ohio.
Nilson Machine Co., The A. H., Bridgeport, Conn.
North American Aviation, Inc., Inglewood, Calif.
Ohio Oil Co., The, Findlay, Ohio.
Oilpure Refiner Co., Glendale, Calif.
Olsen Testing Machine Co., Tinius. Philadelphia, Pa.
Omaha Steel Works, Omaha, Nebr.
Pacific Car & Foundry Co., Renton, Wash.
Pacific Coast Engineering Co., Alameda, Calif.
Pacific Gas & Electric Co., San Francisco, Calif.
Pacific Iron & Steel Co., Los Angeles, Calif.
Parsons Co., The, Newton, Iowa.
Peck, Stow & Wilcox Co., The, Southington, Conn.
Pennsylvania Salt Manufacturing Co., Wyandotte, Mich.
Phillips Doup & Co., Lindenhurst, N. Y.
Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Porter Co., Inc., H. K., Pittsburgh, Pa.
Powhattan Mining Co., Cleveland, Ohio.
Protective Equipment, Inc., Chicago, Ill.
Raybestos-Manhattan, Inc., N. Charleston, S. C.
Revere Copper & Brass, Inc., Rome, N. Y.
Richmond Engineering Co,. Inc., Richmond, Va.
Riddell Corporation, W. A., Bucyrus, Ohio.
Robins Conveyors, Inc., Passaic, N. J.
Root Petroleum Co., El Dorado, Ark.
Ryan Aeronautical Co., San Diego, Calif.
Ryerson & Son, Inc., Joseph T., Chicago, Ill.
Safety First Supply Co., Pittsburgh, Pa.
Sanderson Safety Supply Co., Seattle, Wash.
Sawyer Heating Co., Detroit, Mich.
Shell Oil Co., Inc., New York, N. Y.
Simmons Machine Tool Corporation, Albany, N. Y.
Sinclair Refining Co., East Chicago, Ind.
Smith Co., S. Morgan, York, Pa.
Snyder Foundry Supply Co., Los Angeles, Calif.
Sta Warm Electric Co., The, Ravenna, Ohio.
Standard Asbestos Co., New York, N. Y.
Standard Asbestos Manufacturing Co., Chicago, Ill.
Standard Boiler & Plate Iron Co., Niles, Ohio.
Standard Safety Equipment Co., Chicago, Ill.
Steelcote Manufacturing Co., St. Louis, Mo.
Stockton Fire Brick Co., Pittsburg, Calif.
Stone Supply Co., L. R., Kansas City, Kans.
Strauss Co., The, Pittsburgh, Pa.
Tasa Coal Co., Zelienople, Pa.
Tate-Jones & Co., Inc., Leetsdale, Pa.
Taylor-Wharton Iron & Steel Co., High Bridge, N. J.
Taylor Winfield Corporation, Warren, Ohio.
Thomas Machine Manufacturing Co., Pittsburgh, Pa.
Todd Pacific Shipyards, Inc., San Pedro, Calif.
Travelers Insurance Co., Hartford, Conn.
Treadwell Construction Co., Midland, Pa.
Union Collieries Co., Oakmont, Pa.
U. S. Rubber Co., Los Angeles, Calif., and Chicopee Falls, Mass.
United States Safety Service Co., Kansas City, Mo.
Vanadium-Alloys Steel Co., Colonial Steel Division, Monaca, Pa.
Vega Aircraft Corporation, Burbank, Calif.
Warren City Tank & Boiler Co., Warren, Ohio.
Welding Engineers, Inc., Upper Merion Township, Pa.
Welin Davit & Boat Corporation, Perth Amboy, N. J.
Wellington Sears Co., New York, N. Y.
Westmoreland Mining Co., Blairsville, Pa.
Wheeler Manufacturing Co., F. H., Chicago, Ill.
Wheeling Steel Corporation, Wheeling, W. Va.
Whitcomb Locomotive Co., The, Rochelle, Ill.
Whitlock Manufacturing Co., The, Elmwood, Conn.
Williamson Heater Co., The, Cincinnati, Ohio.
Wilson Steel & Wire Co., Chicago, Ill.
Wisconsin Electric Power Co., Milwaukee, Wis.
Wyatt Coal Co., Charleston, W. Va.
Youngstown Safety Supply Co., Youngstown, Ohio
Zaremba Co., Buffalo, N. Y. (General support.)

U. S. GOVERNMENT

Federal Works Agency, Public Buildings Administration, Washington, D. C. (General support.)
Tennessee Valley Authority, Wilson Dam, Ala.
War Department, Washington, D. C.

COMMERCIAL STANDARDS

CS No. ITEM

0–40. Commercial standards and their value to business (third edition).
1–42. Clinical thermometers (third edition).
2–30. Mopsticks.
3–40. Stoddard solvent (third edition).
4–29. Staple porcelain (all-clay) plumbing fixtures.
5–46. Pipe nipples; brass, copper, steel, and wrought-iron (second edition).
6–31. Wrought iron pipe nipples (second edition). Superseded by CS5–46.
7–29. Standard weight malleable iron or steel screwed unions.
8–41. Gage blanks (third edition).
9–33. Builders' template hardware (second edition).
10–29. Brass pipe nipples. Superseded by CS5–46.
11–41. Moisture regains of cotton yarns (second edition).
12–40. Fuel oils (fifth edition).
13–44. Dress patterns (fourth edition).
14–43. Boys' button-on waists, shirts, junior and sport shirts (made from woven fabrics) (third edition).
15–46. Men's pajamas (made from woven fabrics) (third edition).
16–29. Wallpaper.
17–42. Diamond core drill fittings (third edition).
18–29. Hickory golf shafts.
19–32. Foundry patterns of wood (second edition).
20–42. Staple vitreous china plumbing fixtures (third edition).
21–39. Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).
22–40. Builders' hardware (nontemplate) (second edition).
23–30. Feldspar.
24–43. Screw threads and tap-drill sizes.
25–30. Special screw threads. Superseded by CS24–43.
26–30. Aromatic red cedar closet lining.
27–36. Mirrors (second edition).
28–46. Cotton fabric tents, tarpaulins, and covers (second edition).
29–31. Staple seats for water-closet bowls.
30–31. Colors for sanitary ware.
31–38. Wood shingles (fourth edition).
32–31. Cotton cloth for rubber and pyroxylin coating.
33–43. Knit underwear (exclusive of rayon) (second edition).
34–31. Bag, case, and strap leather.
35–42. Plywood (hardwood and eastern red cedar) (second edition).
36–33. Fourdrinier wire cloth (second edition).
37–31. Steel bone plates and screws.
38–32. Hospital rubber sheeting.
39–37. Wool and part wool blankets (second edition), (withdrawn as commercial standard, July 14, 1941).
40–32. Surgeon's rubber gloves.
41–32. Surgeons' latex gloves.
42–43. Structural fiber insulating board (third edition).
43–32. Grading of sulphonated oils.
44–32. Apple wraps.
45–45. Douglas fir plywood (sixth edition).
46–40. Hosiery lengths and sizes (third edition).
47–34. Marking of gold-filled and rolled-gold-plate articles other than watchcases.
48–40. Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
49–34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50–34. Binders board for bookbinding and other purposes.
51–35. Marking articles made of silver in combination with gold.
52–35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53–35. Colors and finishes for cast stone.
54–35. Mattresses for hospitals.
55–35. Mattresses for institutions.
56–41. Oak flooring (second edition).
57–40. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
58–36. Woven elastic fabrics for use in overalls (overall elastic webbing).
59–44. Textiles—testing and reporting (fourth edition).
60–36. Hardwood dimension lumber.
61–37. Wood-slat venetian blinds.
62–38. Colors for kitchen accessories.
63–38. Colors for bathroom accessories.
64–37. Walnut veneers.
65–43. Methods of analysis and of reporting fiber composition of textile products (second edition).
66–38. Marking of articles made wholly or in part of platinum.
67–38. Marking articles made of karat gold.
68–38. Liquid hypochlorite disinfectant, deodorant, and germicide.
69–38. Pine oil disinfectant.
70–41. Phenolic disinfectant (emulsifying type) (second edition) (published with CS71–41).
71–41. Phenolic disinfectant (soluble type) (second edition) (published with CS70–41).
72–38. Household insecticide (liquid spray type).
73–45. Old growth Douglas fir standard stock doors (third edition).
74–39. Solid hardwood wall paneling.
75–42. Automatic mechanical draft oil burners designed for domestic installations (second edition).
76–39. Hardwood interior trim and molding.
77–40. Sanitary cast-iron enameled ware.
78–40. Ground-and-polished lenses for sun glasses (second edition) (published with CS79–40).
79–40. Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78–40).
80–41. Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81–41. Adverse-weather lamps for vehicles (after market).
82–41. Inner-controlled spotlamps for vehicles (after market).
83–41. Clearance, marker, and identification lamps for vehicles (after market).
84–41. Electric tail lamps for vehicles (after market).

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85–41.	Electric license-plate lamps for vehicles (after market).
86–41.	Electric stop lamps for vehicles (after market).
87–41.	Red electric warning lanterns.
88–41.	Liquid-burning flares.
89–40.	Hardwood stair treads and risers.
90– .	(Reserved for power shovels and cranes).
91–41.	Factory-fitted Douglas fir entrance doors.
92–41.	Cedar, cypress, and redwood tank stock lumber.
93–41.	Portable electric drills (exclusive of high frequency).
94–41.	Calking lead.
95–41.	Lead pipe.
96–41.	Lead traps and bends.
97–42.	Electric supplementary driving and passing lamps for vehicles (after market).
98–42.	Artists' oil paints.
99–42.	Gas floor furnaces—gravity circulating type.
100–44.	Porcelain-enameled steel utensils (second edition).
101–43.	Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.
102– .	(Reserved for Diesel and fuel-oil engines).
103–42.	Cotton and rayon velour (jacquard and plain).
104–46.	Warm-air furnaces equipped with vaporizing pot-type oil burners (second edition).
105–43.	Mineral wool; loose, granulated, or felted form, in low-temperature installations.
106–44.	Boys' pajama sizes (woven fabrics) (second edition).
107–45.	Commercial electric-refrigeration condensing units (second edition).
108–43.	Treading automobile and truck tires.
109–44.	Solid-fuel-burning forced-air furnaces.
110–43.	Tire repairs—vulcanized (passenger, truck, and bus tires).
111–43.	Earthenware (vitreous-glazed) plumbing fixtures.
112–43.	Homogeneous fiber wallboard.
113–44.	Oil-burning floor furnaces equipped with vaporizing pot-type burners.
114–43.	Hospital sheeting for mattress protection.
115–44.	Porcelain-enameled tanks for domestic use.
116–44.	Bituminized-fibre drain and sewer pipe.
117–44.	Mineral wool: blankets, blocks, insulating cement, and pipe insulation for heated industrial equipment.
118–44.	Marking of jewelry and novelties of silver.
(E) 119–45.[1]	Dial indicators (for linear measurements).
120–44.	Standard stock ponderosa pine doors.
121–45.	Women's slip sizes (woven fabrics).
122–45.	Western hemlock plywood.
123–45.	Grading of diamond powder.
(E) 124–45.[1]	Master disks.
125–45.	Prefabricated homes.
126–45.	Tank mounted air compressors.
127–45.	Self-contained mechanically refrigerated drinking water coolers.
128–45.	Men's sport shirt sizes—woven fabrics (other than those marked with regular neckband sizes).
129–46.	Materials for safety wearing apparel.
130–46.	Color materials for art education in schools.
131–46.	Industrial mineral wool products, all types—testing and reporting.
132–46.	Hardware cloth.
133–46.	Woven wire netting.
134–45.	(Reserved).
135–46.	Mens shirt sizes (exclusive of work shirts).

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Division of Trade Standards, National Bureau of Standards, Washington 25, D. C.

[1] Where "(E)" precedes the CS number, it indicates an emergency commercial standard drafted under war conditions with a view toward early revision.

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